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(54) **HIGH HARDNESS  
TITANIUM-ALUMINUM-VANADIUM ALLOY  
AND ITS PRODUCTION**

(57) Abstract:

**PURPOSE:** To produce a high hardness Ti-Al-V alloy as personal ornaments by compounding specific ratios of Al, Al-V alloy, iron group elements,  $\text{TiO}_2$  and Ti each in the shape of fine powder and sintering the compounded powder under specific conditions.

**CONSTITUTION:** The fine powder contg., by weight, each 100 mesh of 1W5% Al, 2W10% Al alloy (1:1 of Al and V), one or more kinds among 0.2W2% iron

group elements (Fe, Ni and CO), 0.5W5%  $\text{TiO}_2$  or  $\text{Al}_2\text{O}_3$  and the balance Ti is uniformly compounded to form the compounded powder. Said compounded powder is packed into a rubber mold and is subjected to compression molding at about  $2\text{W}5\text{t}/\text{cm}^2$  of hydrostatic press. The same is then heated in a vacuum at. (about  $\leq 10^{-3}$  Torr) to  $1,000\text{W}1,500^\circ\text{C}$  at the heating ratio of about  $50\text{W}150^\circ\text{C}/\text{hr}$ , is retained for about 3W5hr, and thereafter is cooled at the cooling ratio of  $100\text{W}400^\circ\text{C}/\text{hr}$ . In this way, the high hardness Ti alloy consisting of 3W10% Al, 1W6% V, 0.2W2% iron group elements and 0.5W5% oxygen is produced by a powder metallurgical method.

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